

WHAT IS CLAIMED:

1. A method for use in a receiver including an amplifier with an adjustable gain, comprising:

receiving data blocks, each data block potentially having a different signal level, and
5 adjusting the gain of the amplifier for a received signal level of one data block
before data in the one data block are amplified in the amplifier.

2. The method in claim 1, wherein the one data block is associated with a corresponding time period.

3. The method in claim 2, further comprising:
10 increasing a speed at which the gain of the amplifier is adjusted before or at a
beginning of the time period.

4. The method in claim 3, wherein the speed is increased depending on a time relative to the time period.

5. The method in claim 3, wherein the speed increases in stages starting before
15 or at the beginning of the time period.

6. The method in claim 5, wherein the stages include a first stage having a faster speed than a second subsequent stage.

7. The method in claim 3, wherein the speed is adjusted depending on an amount of error between a target signal level and a signal level associated with an output of
20 the amplifier.

8. The method in claim 7, wherein the speed is increased for an increased error and decreased for a decreased error.

9. The method in claim 8, wherein the speed is increased or decreased in stages.

10. The method in claim 7, wherein the speed is not adjusted unless a magnitude of the error exceeds a threshold.

11. The method in claim 7, further comprising:
increasing a speed at which the signal level associated with an output of the
5 amplifier is measured prior to the beginning of the time period.

12. The method in claim 2, wherein the adjusting includes presetting a gain of the amplifier with a preset value associated with the signal level of the one data block in preparation for receiving the one data block.

13. The method in claim 12, wherein the preset value is associated with a
10 previously received time period.

14. The method in claim 13, wherein the preset value is a signal power of the previously received time period.

15. The method in claim 13, wherein the previously received time period
corresponds to a time slot in a frame of time slots received before the frame of time slots
15 having a same frame position as the one time slot.

16. The method in claim 12, further comprising:
adjusting the preset value.

17. The method in claim 16, wherein the preset value is adjusted for a transmit
power level change.

20 18. The method in claim 12, further comprising:
storing the gain of the amplifier for the one data block, and
using the stored gain to preset the gain for a subsequent data block.

19. The method in claim 12, further comprising:
predicting the preset value based on a transmitter power sequence, and

presetting the gain for the amplifier for the one block using the predicted preset value.

20. The method in claim 19, further comprising:
determining a ramp-up characteristic of a signal transmitted prior to the one data
5 block, and
using the ramp-up characteristic to predict the preset value.

21. The method in claim 20, wherein the using includes:
making several power measurements at a beginning of the one time block, and
correlating the several power measurements with the ramp-up characteristic to
10 predict the preset value.

22. The method in claim 20, wherein the using includes:
making several power measurements at a beginning of the one time block;
determining a slope of line associated with the power measurements; and
15 using the power measurements, the slope, and the ramp-up characteristic to
predict the preset value.

23. The method in claim 1, wherein the gain adjustment is an automatic gain control (AGC) signal.

25. Apparatus for use in a radio receiver, comprising:
receiving circuitry for receiving a radio signal including multiple data blocks, each
20 data block potentially having a different signal level, and
an adjustable gain amplifier for adjusting a signal level of received data blocks; and
a gain controller for adjusting the gain of the amplifier for a received signal level of
one data block before the data in one data block are amplified in the amplifier.

26. The apparatus in claim 25, wherein the one data block is associated with a
25 corresponding time slot.

27. The apparatus in claim 26, wherein the radio receiver is a time division duplex (TDD) receiver including a TDD timing generator for coordinating time division duplexed communications, and wherein each data block is separated from adjacent data blocks by a guard space.

5 28. The apparatus in claim 25, wherein the gain controller includes:
a differencer for determining a difference between a target signal level and a signal level associated with an output of the amplifier to produce an error, and
processing circuitry for processing the error and generating a control signal used to adjust the gain of the amplifier based on the error.

10 29. The apparatus in claim 28, wherein the processing circuitry includes:
a multiplier for multiplying the error by a gain term;
an integrator for integrating the error over a time period; and
a summer for summing an output from the multiplier and the integrator, the output of the summer corresponding to the control signal.

15 30. The apparatus in claim 29, wherein the integrator includes a store for storing a preset gain value prior to receiving the one data block and for using the stored gain value in generating the integrator output.

31. The apparatus in claim 25, wherein the one data block is associated with a corresponding time period.

20 32. The apparatus in claim 31, wherein the gain controller is configured to increase a speed at which the gain of the amplifier is adjusted at a beginning of the time period.

33. The apparatus in claim 32, wherein the gain controller is configured to increase the speed depending on a time relative to the time period.

25 34. The apparatus in claim 32, wherein the gain controller is configured to increase the speed in stages starting at or before the beginning of the time period.

35. The apparatus in claim 34, wherein the stages include a first stage having a faster speed than a second subsequent stage.

36. The apparatus in claim 31, wherein the gain controller is configured to determine an amount of error between a target signal level and signal level associated with an output of the amplifier and to increase the speed depending on the amount of error.

37. The apparatus in claim 31, wherein the gain controller is configured to increase the speed for an increased error and decrease the speed for a decreased error.

38. The apparatus in claim 37, wherein the gain controller is configured to increase or decrease the speed in stages.

39. The apparatus in claim 37, wherein the gain controller is configured to not adjust the speed unless a magnitude of the error exceeds a threshold.

40. The apparatus in claim 37, further comprising:
a signal strength detector for measuring a signal level associated with an output of the amplifier prior to the beginning of the time period,
wherein the gain controller is configured to increase a speed at which the signal strength detector measures the signal level associated with an output of the amplifier.

41. The apparatus in claim 25, wherein the gain controller is configured to preset a gain of the amplifier with a preset value associated with the signal level of the one data block in preparation for receiving the one data block.

42. The apparatus in claim 41, wherein the preset value is associated with a previously received time period.

43. The apparatus in claim 42, wherein the preset value is a signal power of the previously received time period.

44. The apparatus in claim 43, wherein the previously received time period corresponds to a time slot in a frame of time slots received before the frame of time slots having a same frame position as the one time slot.

45. The apparatus in claim 41, wherein the gain controller is configured to adjust the preset value.

46. The apparatus in claim 45, wherein the gain controller is configured to adjust the preset value for a transmit power level change.

47. The apparatus in claim 41, wherein the gain controller includes a store for storing the gain of the amplifier for the one data block, and wherein the gain controller is configured to use the stored gain to preset the gain for a subsequent data block.

48. The apparatus in claim 41, wherein the gain controller includes a predictor for predicting the preset value based on a transmitter power sequence, and wherein the gain controller is configured to preset the gain for the amplifier for the one block using the predicted preset value.

49. The apparatus in claim 42, wherein the predictor is configured to determine a ramp-up characteristic of a signal transmitted prior to the one block and to use the ramp-up characteristic to predict the preset value.

50. The apparatus in claim 42, wherein the predictor is configured to make power measurements at a beginning of the one time block and to correlate the power measurements with the ramp-up characteristic to predict the preset value.

51. The apparatus in claim 42, wherein the predictor is configured to make several power measurements at a beginning of the one time block, to determine a slope of line associated with the power measurements, and to use the power measurements, the slope, and the ramp-up characteristic to predict the preset value.

52. The apparatus in claim 25, wherein the gain controller is an automatic gain controller.

53. The apparatus in claim 52, further comprising:

an analog to digital converter,

wherein the amplifier output is coupled to an analog to digital converter and an output of the analog to digital converter is coupled to the automatic gain controller.